

TWO NEW SPECIES OF *LIZZIA* (HYDROZOA: ANTHOMEDUSAE) FROM THE EASTERN TROPICAL PACIFIC

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Abstract.—Two new planktonic species of hydromedusae from the Eastern Tropical Pacific, *Lizzia alvarinoae* and *Lizzia ferrarii*, are described and compared with the 5 other species of *Lizzia*, *L. blondina*, *L. elizabethae*, *L. fulgurans*, *L. gracilis*, and *L. octostyla*. Morphological differences, as well as differences in the number and characteristics of the oral tentacles, are detailed.

Resumen.—Se describen dos especies nuevas de hidromedusas del plancton del Pacífico Tropical Oriental, *Lizzia alvarinoae* y *Lizzia ferrarii* y se comparan con las otras especies del género, *L. blondina*, *L. elizabethae*, *L. fulgurans*, *L. gracilis* y *L. octostyla* de las cuáles se diferencian en la morfología, así como en el número y características de los tentáculos orales.

Two new anthomedusas were found in the plankton collected on the series of cooperative cruises made during the EASTROPAC expedition between February 1967 and April 1968. A vast expanse of the Eastern Tropical Pacific was surveyed on EASTROPAC, extending from 20°N to 20°S, and from the American coasts offshore to 126°W. The plankton collections were taken in oblique plankton hauls with a plankton net (0.5 m mouth opening) made of 333 μ m Nitex cloth. The collections were taken from different depths to the surface in the epiplankton region. All drawings in this work were made freehand from preserved material. Type-material of both species is deposited in the National Museum of Natural History, Smithsonian Institution (USNM).

Lizzia alvarinoae, new species

Figs. 1-2

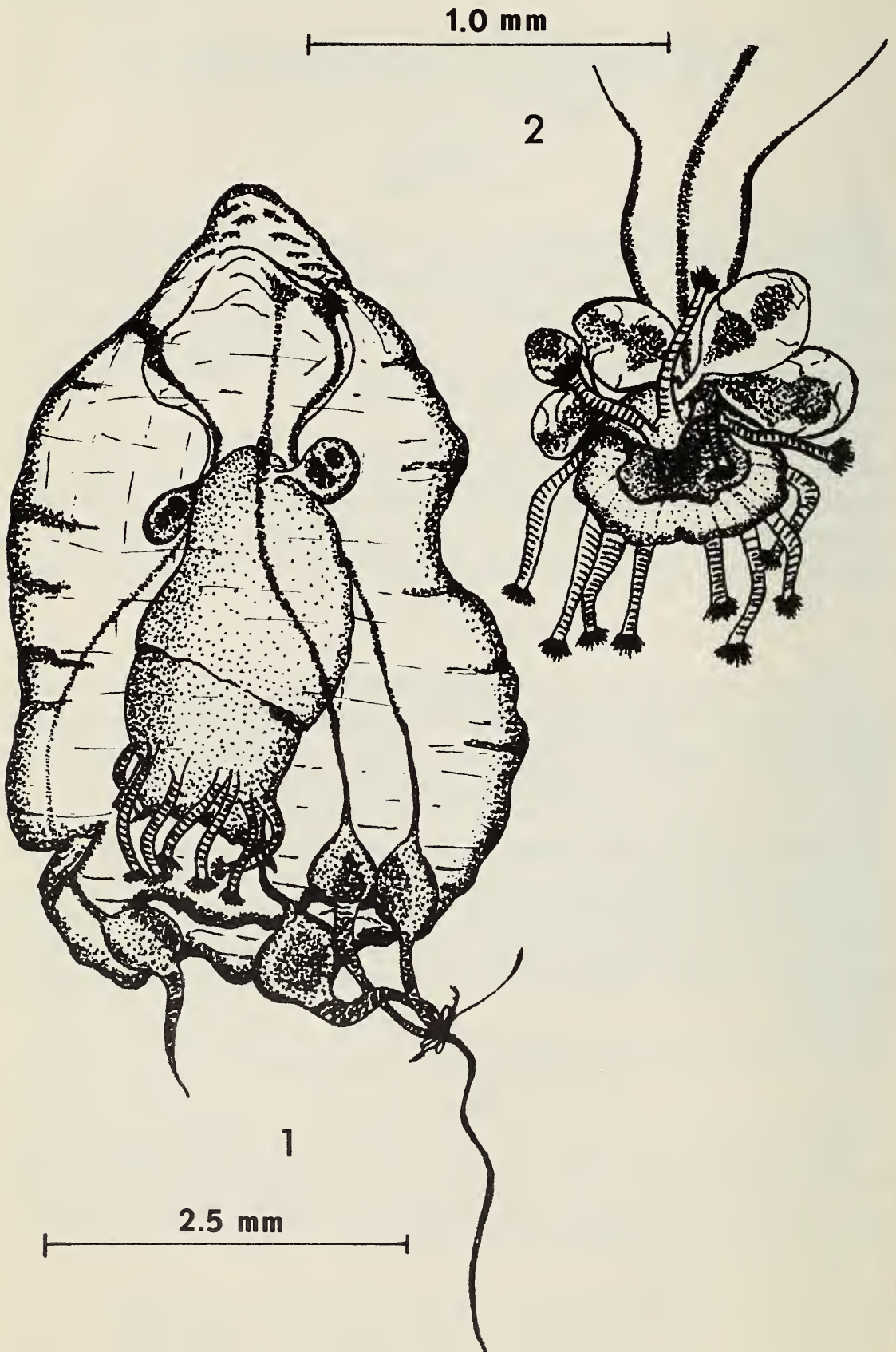
Type-material.—Holotype, USNM 59270, collected 23 March 1968, 03°19.0'S;098°05.0'W, surface; 2 paratypes: USNM 58932, collected 19 February 1968, 02°49.0'S,084°57.0'W, 0-209 m; USNM 58933, collected 7 March 1968, 02°31.5'S,105°03.5'W, 0-209 m.

Additional material.

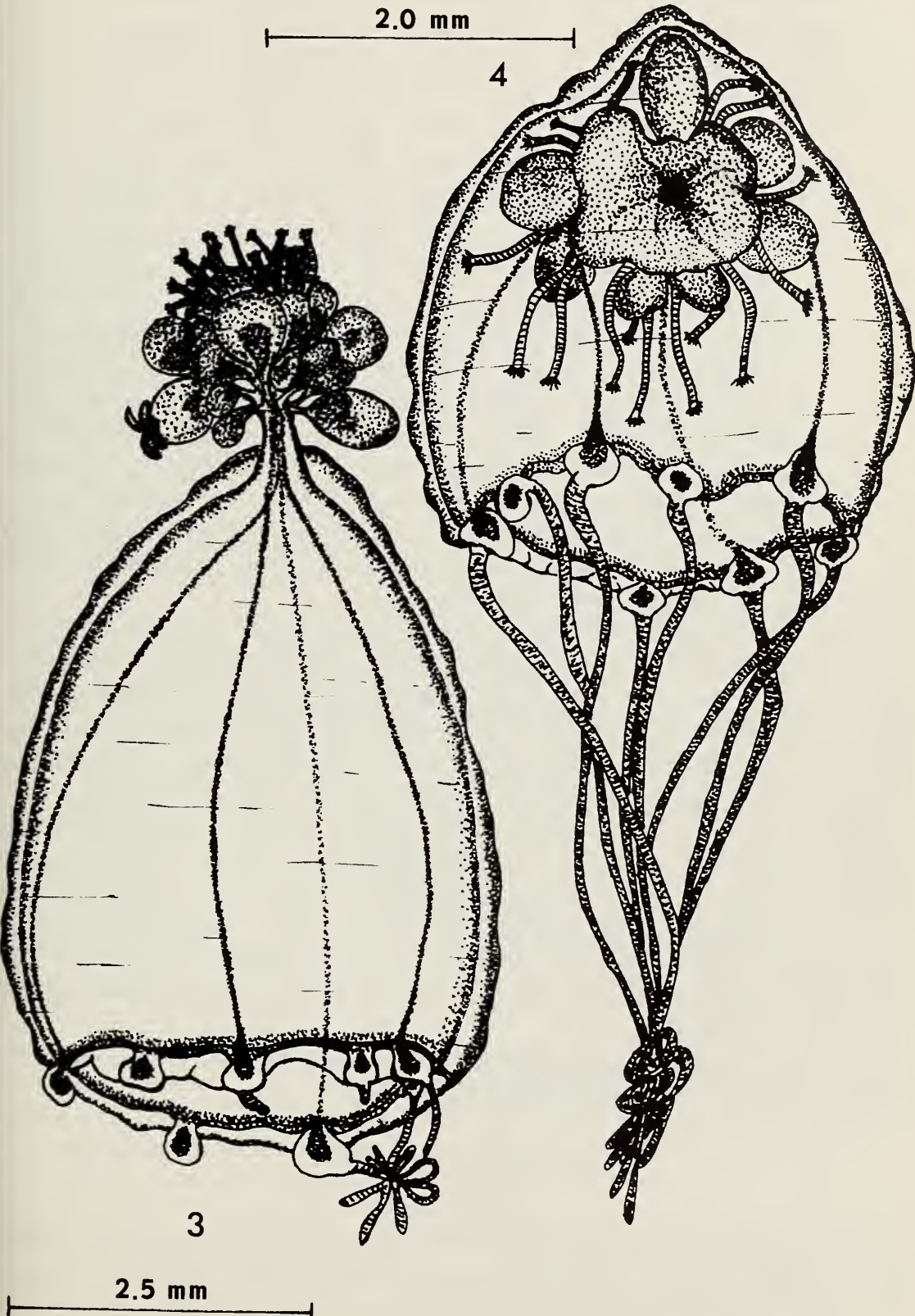
Sta. 13.159; 10°46'S,098°00'W; 26-II-1967; 204-0 m; 3 specimens

Sta. 20.256; 12°45'N,098°22'W; 22-V-1967; 214-0 m; 1 specimen

Sta. 76.076; 04°42'S,104°58'W; 8-III-1968; 213-0 m; 2 specimens



Figs. 1-2. *Lizzia alvarinoae*: 1, Drawn from preserved adult specimen showing shape of the umbrella and the 4 marginal tentacles; 2, Stomach and peduncle, showing insertion of oral tentacles above buccal margin and arrangement and shape of medusa buds.



Figs. 3-4. *Lizzia ferrarii*: 3, Detail of umbrella and stomach, showing different developmental stages of medusa buds, one with 4 short marginal tentacles; 4, Drawn from preserved adult specimen, showing mouthparts and size and shape of marginal tentacles.

Sta. 76.088; 10°53'S, 104°58'W; 10-III-1968; 210-0 m; 1 specimen

Sta. 77.144; 14°59'S, 084°56'W; 15-II-1968; 202-0 m; 1 specimen

Sta. 77.159; 10°50'S, 085°02'W; 16-II-1968; 198-0 m; 1 specimen

Sta. 77.438; 15°00'S, 088°09'W; 8-IV-1968; 212-0 m; 1 specimen

Sta. 77.452; 15°00'S, 093°06'W; 9-IV-1968; 194-0 m; 1 specimen

Diagnosis.—Hydromedusae with 4–20 unbranched oral tentacles; 4 radial marginal tentacles, and oval-shaped medusa buds on stomach walls.

Description.—Bell of holotype 2.5 mm high, 2.0 mm in diameter. Umbrella about 1.0–1.5 mm high and 1.5–2.0 mm wide, dome-shaped, usually slightly higher than wide, with small apical projection (Fig. 1). Jelly moderately thick, especially in apical region. Stomach large, barrel-shaped, attached to a broad-based conical peduncle. Medusa buds oval-shaped, stalked, located on interradial regions of stomach walls. Mouth simple with round opening, surrounded by 4–20 unbranched oral tentacles arising above mouth margin, each with 1 terminal nematocyst cluster (Fig. 2). Stomach and mouthparts extend together beyond half the length of the bell cavity. Four radial marginal tentacles, all of one kind, arise from bell margin. Basal tentacle bulbs large, pear-shaped, with endoderm deeply pigmented. It was not possible to determine the velum dimensions.

Remarks.—The species of *Lizzia* can be rather easily confused with *Podocoryne* or *Rathkea* in some stages of development (Russell, 1954). However, the latter genera can be distinguished by the form of the mouth-lips which are expansions of the lips, each having a single cluster of nematocysts. In *Lizzia* the oral tentacles are inserted a short distance above the opening of the mouth, and each has one terminal nematocyst cluster.

The genus *Lizzia* was established by Forbes in 1846, and there are 5 species described at present. The major differences among them are summarized in Table 1. *Lizzia alvarinoae* differs from the other species mainly in two morphological characteristics. There are only 4 marginal tentacles, all radial, and the number of oral tentacles varies between 4–20. In other species the marginal tentacles are more than 4 and the oral tentacles do not number more than 8.

Etymology.—Named in recognition of the prolific contributions of Dr. Angeles Alvarino in the field of Marine Biology.

Lizzia ferrarii, new species

Figs. 3–4

Type-material.—Holotype, USNM 58929, collected 13 April 1968, 04°56.0'S, 095°13.0'W, surface; 2 paratypes: USNM 58930, collected 18 February 1968, 05°41.0'S; 085°03.0'W, 0–220 m; USNM 58931, collected 8 March 1968, 04°42.0'S; 104°58.0'W, 0–213 m.

Additional material.

- Sta. 13.071; 04°16'S, 092°05'W; 15-II-1967; 206–0 m; 1 specimen
 Sta. 13.322; 11°47'N, 095°08'W; 18-III-1967; 213–0 m; 2 specimens
 Sta. 14.138; 07°55'S, 088°46'W; 1-III-1967; 214–0 m; 1 specimen
 Sta. 14.255; 04°03'S, 086°17'W; 22-III-1967; 207–0 m; 8 specimens
 Sta. 14.287; 09°56'S, 083°56'W; 26-III-1967; 210–0 m; 1 specimen
 Sta. 45.365; 18°48'N, 104°44'W; 10-IX-1967; 207–0 m; 4 specimens
 Sta. 46.050; 02°50'N, 105°16'W; 23-VIII-1967; 204–0 m; 1 specimen
 Sta. 46.137; 11°48'N, 092°02'W; 15-IX-1967; 206–0 m; 2 specimens
 Sta. 46.147; 08°28'N, 092°05'W; 17-IX-1967; 170–0 m; 1 specimen
 Sta. 46.155; 05°40'N, 091°58'W; 18-IX-1967; 224–0 m; 1 specimen
 Sta. 47.049; 01°00'N, 082°00'W; 5-VIII-1967; 215–0 m; 1 specimen
 Sta. 75.239; 05°00'N, 098°02'W; 4-IV-1968; 211–0 m; 1 specimen
 Sta. 77.177; 05°41'S, 085°03'W; 18-II-1968; 220–0 m; 1 specimen
 Sta. 77.386; 02°40'S, 088°04'W; 4-IV-1968; 206–0 m; 1 specimen
 Sta. 77.394; 04°01'S, 088°00'W; 4-IV-1968; 238–0 m; 2 specimens
 Sta. 77.420; 10°22'S, 087°57'W; 6-IV-1968; 215–0 m; 1 specimen
 Sta. 77.452; 15°00'S, 093°06'W; 9-IV-1968; 194–0 m; 1 specimen
 Sta. 77.482; 07°29'S, 094°57'W; 12-IV-1968; 201–0 m; 1 specimen
 Sta. 77.491; 04°56'S, 095°13'W; 13-IV-1968; 217–0 m; 26 specimens

Diagnosis.—Hydromedusae with 12–24 unbranched oral tentacles; 8 long marginal tentacles, 4 radial and 4 interradial in position, and pear-shaped medusa buds developed on stomach walls.

Description.—Bell of holotype 2 mm high, 2 mm in diameter. Umbrella about 1.0–2.5 mm high and 1.0–3.0 mm wide, dome-shaped, sometimes a little wider than high, with a small apical projection. Jelly very thick, especially in apical region. Velum broad. Stomach cylindrical, attached to a small conical peduncle. Medusa buds completely surrounding stomach, pear-shaped, differing morphologically in different stages of development. Some have only 4 short, equally developed, marginal tentacles (Fig. 3). Mouth a simple round opening, surrounded by 12–24 unbranched, oral tentacles arising above mouth margin, each with 1 terminal nematocyst cluster. Stomach and mouthparts together extend beyond half the length of the bell cavity. The 4 radial canals and ring canal narrow; with 8 long, similar, marginal tentacles, 4 radial and 4 interradial (Fig. 4). Tentacles $\frac{1}{3}$ longer than bell height. Basal tentacle bulbs large, pear-shaped. Each tentacle bulb with a dense mass of red endodermal pigment, which in radial tentacle bulbs extends a short distance up radial canals.

Remarks.—*Lizzia ferrarii* differs from the related species in two morphological features. The number of oral tentacles, which in other species is no greater than 20, varies between 12–24. *L. ferrarii* has 8 marginal tentacles. All related species except *L. gracilis* have different numbers. However the tentacles of *L. gracilis* are small and curve upwards over the margin of the umbrella; the radial tentacles are twice as long as the interradial ones. In *L.*

Table 1.—Differential characteristics of species of *Lizzia*.

Characteristics	Species			
	<i>L. blondina</i> Forbes, 1848	<i>L. elizabethae</i> Haeckel, 1879	<i>L. fulgurans</i> (Agassiz, 1865)	<i>L. gracilis</i> (Mayer, 1910)
Umbrella	Semiglobular 2 mm high and wide Thick apice Velum broad	Pear-shaped 6 mm high and 4 mm wide Thick apice	Pear-shaped 1 mm high Velum broad	Broader than high (3 mm). Slight apical projection Velum broad
Gastric peduncle	Low, pyramidal	Short	Well developed	Slightly developed
Stomach	Short, quadrangular	Along with the peduncle reaches as far as half the bell cavity	Short	Short
Oral tentacles	4 Small, simple unbranched	4 Radial, as long as the stomach	4 Simple, unbranched	8 4 radial and 4 interradial
Medusa buds	On the stomach	Not frequently observed	On the stomach	On the stomach
Marginal bulbs and tentacles	8 4 radial with 3 tentacles each 4 interradial with 1 tentacle each	8 4 radial with 4 tentacles each 4 interradial with 2 tentacles each	8 sometimes 16 Each with 1 stiff and upward curved tentacle	8 4 radial and 4 interradial each with 1 stiff and upward curved tentacle
Geographic distribution	North-western Europe; Portugal; Mediterranean	English Channel, England	North Carolina, New England	Tortugas, Florida; Sunda Strait, Indonesia

Table 1.—Continued.

Characteristics	Species		
	<i>L. octostyla</i> (Haeckel, 1879)	<i>L. alvarinoae</i> n. sp.	<i>L. ferrarii</i> n. sp.
Umbrella	0.4 mm high 0.5 mm wide Low conical projection	Dome-shaped, slightly higher than wide Short apical projection	Dome-shaped, wider than high. Jelly thick in apical region Velum broad
Gastric peduncle	Well developed	Large, with broad base	Small, conical
Stomach	Same length as the peduncle	Large, barrel-shaped	Cylindrical
Oral tentacles	8 Situated in pairs on the four radii	4-20 Simple, unbranched	12-24 Simple, unbranched
Medusa buds	On the stomach	Oval-shaped, on the stomach	Pear-shaped, on the stomach
Marginal bulbs and tentacles	8 Small, each with 1 tentacle, sometimes with an additional tentacle on each radial bulb	4 Large and pear-shaped, radial, each with 1 tentacle	8 4 radial and 4 interradial, each with 1 long tentacle
Geographic distribution	Adriatic Sea	Eastern Tropical Pacific	Eastern Tropical Pacific

ferrarii the marginal tentacles are large, equal in length and without any curvature.

Etymology.—*Lizzia ferrarii* is named after Dr. Frank D. Ferrari who kindly placed at my disposal the plankton collections of the EASTROPAC expedition.

Acknowledgments

I wish to express my appreciation to Dr. Frank Ferrari, Director of the Oceanographic Sorting Center, Smithsonian Institution for the reasons cited above. I am especially grateful to Dr. Angeles Alvariño for checking the descriptions of these two new species and reviewing the manuscript.

Literature Cited

- Agassiz, A. 1865. North American Acalephae. Illustrated catalogue of the Museum of Comparative Zoology at Harvard College, II.—Mem. Mus. Comp. Zool. 1(2):1–234.
- Bigelow, H. B. 1914. Fauna of New England. 12. List of the Medusae Craspedota, Siphonophorae, Scyphomedusae, Ctenophorae.—Papers Boston Soc. Nat. Hist. 7:1–37.
- Kramp, P. L. 1928. Papers from Dr. Mortensen's Pacific Expedition 1914–16. Hydromedusae and Anthomedusae.—Vidensk. Medd. dansk. Naturh. Foren. Copen. 85:27–62.
- . 1959. The Hydromedusae of the Atlantic Ocean and adjacent waters.—Cana Rep. 46:3–283.
- . 1961. Synopsis of the Medusae of the world.—J. Mar. Biol. Ass. U.K. 40:1–469.
- . 1965. The Hydromedusae of the Pacific and Indian Oceans. Section I.—Dana Rep. 63:1–162.
- . 1968. The Hydromedusae of the Pacific and Indian Oceans. Sections II and III.—Dana Rep. 13(72):1–200.
- Mayer, A. G. 1900. Medusae of the world. Vol. I, II and III.—Carnegie Foundation, Washington, D.C. 735 pp.
- Russell, F. S. 1954. The Medusae of the British Isles: Anthomedusae, Leptomedusae, Limnomedusae, Trachymedusae and Narcomedusae.—Cambridge University Press, 530 pp.

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